

PATENT

Docket No. Barrese 1-1-1-2

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTORS: Michael A. Barrese, Brad L. Grande, Vernon Glen Koll,
and Eugene Joseph Yurek

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TITLE: TELEPHONE LINE POWER SUPPLY

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attention: Board of Patent Appeals and Interferences

APPELLANTS' BRIEF

This Appeal Brief is in furtherance of the Notice of Appeal filed in this case on March 8, 2007. The Commissioner is authorized to charge the fee for filing of this Appeal Brief to the provided credit card.

1. REAL PARTY IN INTEREST

The present application is assigned to Agere Systems Inc, a subsidiary of LSI Corporation. Accordingly, LSI Corporation is the real party in interest.

2. RELATED APPEALS AND INTERFERENCES

The Appellants, assignee, and the legal representatives of both are unaware of any other appeal or interference which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

3. STATUS OF CLAIMS

- A. Claims canceled: 2
- B. Claims withdrawn from consideration but not canceled: 14-17
- C. Claims pending: 1, 3-22
- D. Claims allowed: none
- E. Claims rejected: 1, 3-13 and 18-22
- F. Claims appealed: 1, 3-13 and 18-22

Appealed Claims 1, 3-22 as currently pending are attached as the Claims Appendix hereto.

4. STATUS OF AMENDMENTS

A Request for Continued Examination under 37 C.F.R. §1.114 was filed on May 15, 2006; claim amendments were made and entered by the Examiner. In response,

the Examiner issued a non-final Office Action on July 13, 2006. A Reply under 37 C.F.R. §1.112 was filed on October 12, 2006: no claim amendments were made. In response, the Examiner issued the final Office Action appealed herein.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER

Claim 1: A power supply circuit for powering an electrical device using power from a telephone line, said circuit comprising: a gyrator having an input coupled to the telephone line and an output (Figure 1, item 120, page 5 line 16 through page 6 line 4); an inductor having an input and an output (Figure 1, item 160, page 7 lines 1-9); an oscillator having an output (Figure 1 item 130, page 6 lines 5-9); a pulse circuit coupled to said oscillator and coupled between the output of said gyrator and the input of said inductor (Figure 1 item 140, page 6 lines 10-15); a converter coupled between the output of said inductor and the electrical device, said converter producing line power at an output (Figure 1 item 180, page 8 lines 3-9); and a combiner having an input coupled to a host power supply and an output coupled to the output of said converter (Figure 1 item 200), said combiner supplementing said line power with host power from said host power supply when the voltage level of said line power falls below a predetermined level (page 10, lines 13-22).

Claim 18: A telephone line powered modem for coupling to a telephone line, said telephone line powered modem for use with a host power supply supplying host power, said modem comprising: a power supply circuit for supplying line power used to power

the telephone line powered modem from power drawn from the telephone line (Figure 1 item 100, page 5 lines 1-10); and a combiner coupled between said power supply circuit and the host power supply, said combiner supplementing said line power with the host power when the voltage level of said line power falls below a predetermined level (Figure 1 item 200, page 10, lines 13-22).

Claim 21: A method for powering an electrical device within a host device coupled to a telephone line, said host device having a host power supply, said method comprising the steps of: supplying line power from power drawn from the telephone line (Figure 2 step 260, page 11 lines 17-18); receiving host power from the host power supply (Figure 2 step 262, page 11 line 18); supplying said line power to the electrical device (Figure 2 step 264, page 11 line 19); and supplementing said line power supplied to the electrical device with said host power when the voltage level of said line power falls below a predetermined level (Figure 2 step 266, page 11 lines 19-21).

The present invention is an improved telephone line power supply that creates high yield, low voltage power using power drawn from a telephone line for powering a peripheral device, such as a modem integrated into a notebook PC, and further supplementing the low power voltage with power from a host device, such as the notebook PC, if the power drawn from the phone line is insufficient to power the peripheral device. The present invention finds particular utility in supplying power to electrical devices such as telephone modems attached to host devices such as laptop PCs and PDAs.

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Appellants request the Board to review the following rejections:

1. Rejection of Claims 1, 3-6, 8-13 and 18-22 under 35 U.S.C. §103(a) based on U.S. Patent No. 5,799,069 to Weston et al. in view of U.S. Patent No. 4,008,427 to Johnson, and in further view of U.S. Patent No. 6,624,635 to Lui.

7. ARGUMENT

1. Rejection of Claims 1, 3-6, 8-13 and 18-22 under 35 U.S.C. §103(a) based on Weston in view of Johnson, and in further view of Lui.

The Cited Art Does Not Render the Claims ObviousThe Examiner Has Not Established a *Prima Facie* Case of Obviousness

As set forth in the MPEP:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skilled in the art, to modify the reference or to combined reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP 2143

The present claimed invention provides for an improved telephone line power supply that creates high yield, low voltage power using power drawn from a telephone line, isolating and regulating this power so to be used as a power supply for a peripheral device, such as a modem. Through this isolating and regulating power, a constant output power is

provided to the modem from the phone line itself. However, one problem that can arise with regulating power from a phone line is a voltage drop on the phone line itself. The present invention solves this problem by providing combiner circuitry for supplementing the power drawn from the phone line with power from a battery located in a host device in the event the voltage level of the phone line drops below a predetermined level. One important aspect of the present invention is that the power from the phone line is not completely replaced by battery power, rather it is supplemented with battery power at a combiner (e.g., Claim 1: "...a combiner having a input coupled to a host power supply and an output coupled to the output of said converter, said combiner supplementing said line power with host power from said host power supply when the voltage level of said line power falls below a predetermined level.") This also works to extend the battery life of the host device.

The cited prior art fails to address or solve the problem solved by the present invention, specifically utilizing a pulse circuit in combination with a power converter to provide a constant power level to a phone line powered device, and, when necessary, supplementing the phone line power with power from a host device. Thus, one goal of the invention, specifically the isolation of and regulation of power from a phone line, shows the present claimed invention to be non-obvious over the prior art, specifically Weston, Johnson, Wakamatsu and Lui as cited by the Examiner, whether considered alone or in any combination.

In previously filed replies (such as the response mailed October 12, 2006), Appellants have addressed the combination of Westin in view of Johnson extensively, and for convenience, the arguments are briefly repeated herein. Additional arguments herein

focus on the addition of Lui as a teaching reference in rejecting Claims 1, 3-6, 8-13 and 18-22, and the Examiner's assertion that Lui teaches combiner circuitry as is claimed by the present invention.

The Examiner acknowledges that Weston lacks a gyrator, inductor and a pulse circuit. Weston lacks these elements as it is only concerned with measuring the voltage currently available in the phone line and adjusting data transfer and clock rates to match the available power in the phone line. Specifically, Weston "provides a method and apparatus for implementing a phone-line powered modem that can dynamically adapt the clock rate and the data transfer rate" (column 4, lines 20-23). In addition to having no teaching of the claimed elements, no teaching of regulating the power supplied from a phone line is taught in Weston. The Examiner relies on Fig 3 Item 64 to teach regulation of power from the phone line. However, Weston presents Item 64 as merely a black box, devoid of any internal details. One cannot merely assume that the box regulates power with a gyrator, inductor and oscillator. Functionally, one does not even know that this box has performs any type of regulation. Weston states Item 64 "receives DC power from phone line 74, converts it to an appropriate DC power supply voltage, and provides the DC power supply voltage to the various components of the modem" (column 5, lines 21-25).

In fact, Weston seems to teach away from regulating the power drawn from the phone line as the principle invention of Weston is a system that regulates data transfer rates to accommodate unregulated power drawn from the phone line. By creating a system where the modem adjusts data transfer rates to match a provided power level, Weston is teaching a system where faults in the supplied power are accepted and handled

by adjusting the clock rate of the data transfer rather than regulating the power level. Additionally, Weston provides no motivation for modifying the invention to provide for regulating a constant power level as is taught by the present invention.

The Examiner looks to Johnson to teach the use of an oscillated pulse width modulation switching circuit. Johnson teaches a PWM switching circuit for use over a wide range of input voltages. The Examiner asserts that it would have been obvious to one of ordinary skill to modify Weston to include Johnson's PWM switching circuit. However, no motivation is shown in either Weston or Johnson for this modification. Weston merely accepts the current voltage and power levels and adjusts data transfer rates to deal with these levels. Nowhere in Weston is it taught that output power levels can be regulated to create a constant output power. In fact, as mentioned above, Weston teaches away from this concept. Additionally, Johnson makes no mention of utilizing his teachings in a phone line powered modem where data transfer speeds are adjusted based upon the input voltage and power levels, and neither teaches nor suggests the claimed structure.

Lui teaches the use of a Universal Power Supply (UPS) to supply power to an Internet telephone or modem. However, Lui provides no teaching of utilizing a combiner to supplement power drawn from a phone line to power the modem. Lui merely teaches a UPS that utilizes an AC/DC converter, a multiplexer for selecting inputs, and a battery. One of two DC power supplies is always powering the system, not a combination of the two. There is no teaching of combiner circuitry, as the Examiner asserts his rejections of Claims 1, 18 and 21. However, and in contrast to the present invention, Lui teaches a

multiplexer operating as a switch, selecting one input or the other, in this case either DC power or power supplied by a battery. However, as taught by Lui, a multiplexer is not a combiner. Rather, the multiplexer taught by Lui is a logic device used to select only one output from a series of inputs. This directly teaches away from the combiner circuitry of the present invention. Specifically, Lui (Column 4, lines 23-29) recites:

The multiplexer **62** is controlled by BAT_TEST_L input **64**, and connects the battery **24** to the DC output **68** when BAT_TEST_L **64** is asserted. During the time BAT_TEST_L **64** is asserted, the DC output **68** is provided exclusively by the battery **24**, and when it is not asserted, the DC output **68** is provided by the AC/DC converter output **14**.

Here, it is clear that the multiplexer does not combine the two inputs as asserted by the Examiner, but rather acts as a switching mechanism, choosing one input or the other, but never producing an output that contains a combination of the two inputs as is specifically claimed in the present invention. Each of the additional independent claims recite a similar limitation citing the combiner and along with its functionality. Additionally, Lui provides no motivation for modifying a system utilizing a phone line powered modem where data transfer speeds are adjusted based upon the input voltage and power levels. As previously noted, Weston in view of Johnson does not teach the present claimed invention, and the addition of Lui provides no further teachings or motivation to modify the system of Weston in view of Johnson to achieve the present invention.

Without such teaching or suggestion, it is improper to reject the claims based upon Weston, Johnson, and Lui, either alone or in any combination. Claims 1, 3-6, 8-13 and 18-22 patentably define over Weston in view of Johnson, and further in view of Lui, and the

Board is respectfully requested to reconsider and withdraw the rejection of the claim based on these references.

8. CONCLUSION

For the foregoing reasons Appellants respectfully request this Board to overrule the Examiner's rejections and allow Claims 1, 3-13 and 18-22.

Respectfully submitted,

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Date

/John R. Brancolini/
John R. Brancolini
Reg. No. 57,218
Synnestvedt & Lechner LLP
1101 Market Street
Suite 2600
Philadelphia, PA 19107
Telephone: 215-923-4466
Facsimile: 215-923-2189

CLAIMS APPENDIX

CLAIMS INVOLVED IN THIS APPEAL:

1. (Previously presented) A power supply circuit for powering an electrical device using power from a telephone line, said circuit comprising:

 a gyrator having an input coupled to the telephone line and an output;

 an inductor having an input and an output;

 an oscillator having an output;

 a pulse circuit coupled to said oscillator and coupled between the output of said gyrator and the input of said inductor;

 a converter coupled between the output of said inductor and the electrical device, said converter producing line power at an output; and

 a combiner having an input coupled to a host power supply and an output coupled to the output of said converter, said combiner supplementing said line power with host power from said host power supply when the voltage level of said line power falls below a predetermined level.

2. Cancelled.

3. (Previously presented) The circuit of claim 1, wherein said combiner comprises a diode, said diode having an anode coupled to said host power supply and a cathode coupled to the output of said converter.

4. (Original) The circuit of claim 3, wherein said diode is Schottky diode.

5. (Original) The circuit of claim 1, further comprising:

a polarity guard coupled between the telephone line and said gyrator.

6. (Original) The circuit of claim 1, further comprising:

a startup circuit coupled to said pulse circuit, said startup circuit controlling said pulse circuit at startup.

7. (Original) The circuit of claim 1, further comprising:

a shunt regulator coupled to the output of said converter.

8. (Original) The circuit of claim 1, wherein said pulse circuit comprises a switch coupled between said gyrator and said inductor.

9. (Original) The circuit of claim 1, wherein said converter comprises:

a divider circuit having an input coupled to said oscillator and outputs;

a transformer having a primary coil and a secondary coil with a center tap coupled to the output of the inductor;

a dual switch coupled between the outputs of said divider circuit and said transformer;

a clamping circuit coupled to said dual switch; and
a rectifier having inputs coupled to said primary coil of said transformer and an output producing said line power.

10. (Original) The circuit of claim 1, wherein said converter comprises:

a rectifier having inputs coupled said inductor and an output producing said line power.

11. (Original) The circuit of claim 1, wherein the electrical device is a telephone modem.

12. (Original) The circuit of claim 1, wherein the electrical device is a rechargeable battery.

13. (Original) The circuit of claim 1, wherein said oscillator is configured to oscillate at about 500kHz and produce about 250ns pulses and said pulse circuit pulses said inductor with current for about 250ns every 2 μ s.

14. (Withdrawn) A power supply element for use with a power supply circuit and a host power supply, said element comprising:

a combiner coupled between the power supply circuit and the host power supply, said combiner supplementing line power from the power supply circuit with host power

from the host power supply when the voltage level of the line power from the power supply circuit falls below a predetermined level.

15. (Withdrawn) The element of claim 14, wherein said combiner passes only line power from the power supply circuit to an electrical device when the voltage level of the line power from the power supply circuit is at or above a predetermined level.

16. (Withdrawn) The element of claim 14, wherein said combiner comprises a diode, said diode having an anode coupled to the host power supply and a cathode coupled to the power supply circuit.

17. (Withdrawn) The element of claim 16, wherein said diode is a Schottky diode.

18. (Original) A telephone line powered modem for coupling to a telephone line, said telephone line powered modem for use with a host power supply supplying host power, said modem comprising:

a power supply circuit for supplying line power used to power the telephone line powered modem from power drawn from the telephone line; and

a combiner coupled between said power supply circuit and the host power supply, said combiner supplementing said line power with the host power when the voltage level of said line power falls below a predetermined level.

19. (Original) The modem of claim 18, wherein said combiner comprises a diode, said diode having an anode coupled to the host power supply and a cathode coupled to said power supply circuit.

20. (Original) The modem of claim 19, wherein said diode is a Schottky diode.

21. (Original) A method for powering an electrical device within a host device coupled to a telephone line, said host device having a host power supply, said method comprising the steps of:

- supplying line power from power drawn from the telephone line;
- receiving host power from the host power supply;
- supplying said line power to the electrical device; and
- supplementing said line power supplied to the electrical device with said host power when the voltage level of said line power falls below a predetermined level.

22. (Original) The method of claim 21, wherein when the voltage level of said line power is at or above said predetermined level, only said line power is passed to the electrical device.

EVIDENCE APPENDIX

No additional evidence is presented.

RELATED PROCEEDINGS APPENDIX

No related proceedings are presented.